

PERCUTANEOUS TRANSMYOCARDIAL REVASCULARIZATION (PTMR) SYSTEM

Abstract of the Disclosure

Percutaneous transmyocardial revascularization systems are disclosed for creating thin, linear incisions through the endocardium and partially into the myocardium. The systems mitigate the deficiencies of current approaches that position a distal tip channeling mechanism against the endocardial surface. The systems position a catheter body lengthwise along the endocardial surface and incorporate a cutting mechanism movable radially relative to the catheter body to create one or more elongate thin, linear incisions along one or more windows through the catheter body. Flexible support strands are used to urge each window into intimate contact with the endocardial surface. Each cutting element is adapted to protrude radially outward from the catheter body to contact tissue adjacent each window. The cutting mechanism incorporates a mechanical cutting element or an electrode designed to transmit direct current or radiofrequency energy into tissue to simultaneously cut and coagulate tissue. The catheter also can infuse a therapeutic agent directly into the incisions to encourage angiogenesis. The catheter also cuts thin, linear incisions capable of ablating arrhythmia substrates by disrupting electrical propagation through the affected myocardium.

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